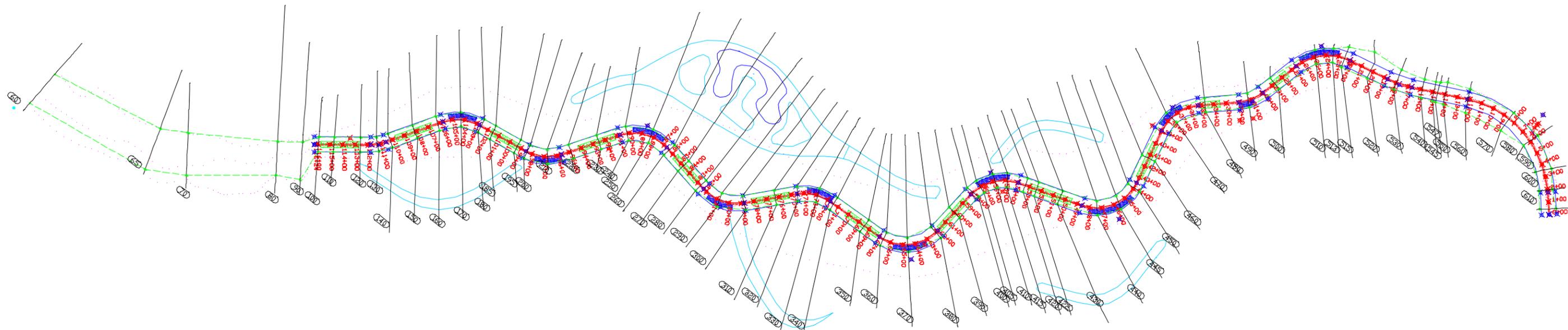
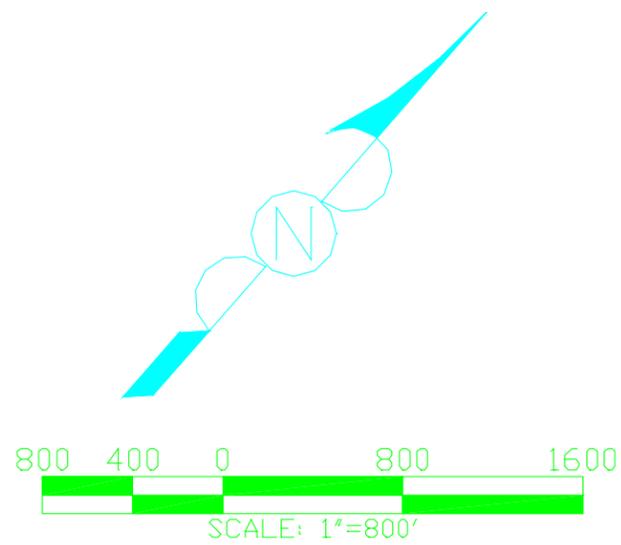


**Appendix H**  
HEC-RAS Output



Legend

	Model Cross-Section
	Model Banks
	Model Flow Lengths



**MERCED RIVER — ROBINSON SITE**  
Modeling Cross Sections

Department of Water Resources  
San Joaquin District  
River Management Section



Designed by  
River Management Section  
Drawn by  
B. Willems, D. Encinas

Checked by  
Kevin Faulkenberry  
Date  
September 8, 2000

1700 cfs Exist Bridge						
Model Sta	W.S. Elev (ft)	Bank Elev (ft)	Min Ch El (ft)	Shear Chan (lb/sq ft)	Vel Chnl (ft/s)	E.G. Slope (ft/ft)
610	207.5	208.0	200.5	0.26	3.77	0.00113
600	207.2	208.0	201.0	0.36	4.41	0.00149
590	206.9	206.0	204.0	0.50	4.65	0.00288
580	206.5	206.0	202.0	0.25	3.61	0.00116
570	206.0	205.9	202.0	0.38	4.18	0.00261
560	205.0	205.3	202.0	0.37	4.10	0.00272
550	204.3	204.5	202.0	0.51	4.73	0.00408
547	204.2	204.4	200.5	0.33	4.00	0.00199
545	204.1	204.0	200.0	0.32	3.93	0.00181
540	204.0	204.1	200.0	0.29	3.80	0.00156
530	203.5	203.4	200.0	0.39	4.27	0.00243
520	202.3	202.2	200.0	0.95	6.00	0.01132
515	200.5	201.4	196.8	0.69	5.81	0.00387
513	200.4	200.9	194.6	0.32	4.15	0.00133
510	200.3	200.4	194.1	0.26	3.81	0.00105
500	199.1	199.5	195.3	0.84	6.31	0.00519
490	198.6	198.8	192.5	0.27	3.87	0.00110
480	197.6	197.8	193.6	0.73	5.92	0.00435
470	197.1	197.0	190.7	0.23	3.58	0.00088
460	196.4	196.2	191.9	0.45	4.71	0.00238
450	195.7	195.7	190.2	0.48	4.93	0.00254
445	195.2	195.2	188.8	0.24	3.62	0.00091
440	195.1	194.9	188.5	0.20	3.39	0.00075
430	194.7	194.4	190.1	0.33	4.10	0.00169
422	194.0	194.0	189.7	0.64	5.57	0.00376
420	193.7	193.9	189.2	0.57	5.31	0.00309
415	193.5	193.6	187.2	0.25	3.69	0.00096
410	193.4	193.4	187.0	0.23	3.59	0.00089
405	193.3	193.1	186.7	0.22	3.48	0.00080
400	193.2	193.0	187.1	0.25	3.72	0.00104
390	192.8	192.7	187.4	0.43	4.66	0.00221
380	192.4	192.4	186.8	0.38	4.44	0.00184
370	192.1	192.0	185.6	0.23	3.57	0.00088
360	191.8	191.7	186.0	0.34	4.20	0.00152
350	191.3	191.5	186.2	0.50	4.97	0.00264
340	190.8	190.9	184.7	0.27	3.82	0.00108
330	190.7	190.7	184.3	0.24	3.62	0.00091
320	190.4	190.4	184.6	0.31	4.06	0.00137
310	190.0	190.1	184.8	0.46	4.82	0.00243
300	189.6	189.7	183.9	0.36	4.32	0.00165
290	189.4	189.3	182.9	0.23	3.56	0.00087
280	189.0	189.0	183.3	0.33	4.17	0.00151
270	188.6	188.6	183.3	0.47	4.86	0.00249
260	188.3	188.4	182.6	0.33	4.15	0.00148
250	188.1	188.1	181.7	0.23	3.59	0.00089
240	187.9	187.8	181.7	0.26	3.77	0.00107
230	187.4	187.4	182.1	0.46	4.80	0.00240
220	187.0	187.0	181.2	0.34	4.21	0.00153
210	186.8	186.7	180.3	0.22	3.54	0.00085
200	186.6	186.4	180.6	0.28	3.89	0.00117
195	186.4	186.3	181.0	0.42	4.59	0.00212
185	185.8	185.9	180.6	0.50	4.99	0.00268
180	185.6	185.8	179.8	0.32	4.15	0.00142
170	185.4	185.5	179.1	0.24	3.66	0.00094
160	185.1	185.1	179.4	0.34	4.22	0.00158
150	184.7	184.8	179.5	0.48	4.90	0.00254
140	184.2	184.4	178.7	0.39	4.47	0.00184
130	184.2	184.2	177.8	0.24	3.62	0.00092
120	183.8	183.9	178.5	0.44	4.74	0.00228
110	183.2	183.5	178.2	0.54	5.16	0.00291
105	Bridge					
100	182.1	183.3	178.0	0.79	6.13	0.00488

8000 cfs Exist Bridge							
Model Sta	W.S. Elev (ft)	Bank Elev (ft)	Min Ch El (ft)	Shear Chan (lb/sq ft)	Vel Chnl (ft/s)	Vel Overbank (ft/s)	E.G. Slope (ft/ft)
610	211.9	208.0	200.5	0.85	7.64	2.16	0.00174
600	210.5	208.0	201.0	1.78	10.78	2.53	0.00423
590	209.8	206.0	204.0	2.01	10.48	3.42	0.00564
580	209.1	206.0	202.0	1.18	8.61	2.27	0.00315
570	208.5	205.9	202.0	1.00	7.65	2.83	0.00330
560	207.4	205.3	202.0	0.96	7.40	2.27	0.00339
550	206.7	204.5	202.0	1.00	7.54	2.90	0.00363
547	206.5	204.4	200.5	0.92	7.37	3.09	0.00291
545	206.4	204.0	200.0	0.97	7.58	2.69	0.00304
540	206.1	204.1	200.0	0.96	7.57	2.49	0.00300
530	205.0	203.4	200.0	1.40	8.74	2.54	0.00569
520	204.1	202.2	200.0	0.97	6.97	1.86	0.00507
515	203.0	201.4	196.8	1.04	7.50	2.16	0.00428
513	202.7	200.9	194.6	0.91	7.52	2.24	0.00248
510	202.5	200.4	194.1	0.71	6.69	2.34	0.00184
500	201.4	199.5	195.3	1.09	7.93	3.26	0.00370
490	200.4	198.8	192.5	1.07	8.13	2.48	0.00300
480	199.5	197.8	193.6	1.02	7.62	2.78	0.00366
470	198.7	197.0	190.7	0.76	6.87	2.05	0.00212
460	198.0	196.2	191.9	0.72	6.41	2.27	0.00256
450	197.5	195.7	190.2	0.57	5.74	2.04	0.00189
445	196.8	195.2	188.8	0.58	5.97	1.76	0.00161
440	196.6	194.9	188.5	0.50	5.55	1.61	0.00136
430	196.3	194.4	190.1	0.45	5.07	1.82	0.00153
422	196.0	194.0	189.7	0.41	4.90	1.82	0.00141
420	195.8	193.9	189.2	0.47	5.25	1.85	0.00150
415	195.7	193.6	187.2	0.40	5.04	1.60	0.00104
410	195.4	193.4	187.0	0.59	6.10	1.80	0.00154
405	195.1	193.1	186.7	0.64	6.36	1.82	0.00168
400	195.1	193.0	187.1	0.54	5.80	1.91	0.00151
390	194.7	192.7	187.4	0.67	6.32	2.10	0.00215
380	194.4	192.4	186.8	0.56	5.81	1.90	0.00171
370	194.0	192.0	185.6	0.46	5.38	1.72	0.00120
360	193.7	191.7	186.0	0.58	5.92	1.99	0.00170
350	193.2	191.5	186.2	0.83	6.94	2.24	0.00274
340	192.7	190.9	184.7	0.58	6.00	1.67	0.00163
330	192.5	190.7	184.3	0.50	5.58	1.60	0.00135
320	192.2	190.4	184.6	0.51	5.57	1.70	0.00151
310	192.0	190.1	184.8	0.51	5.46	1.76	0.00162
300	191.6	189.7	183.9	0.52	5.61	1.70	0.00152
290	191.3	189.3	182.9	0.50	5.64	1.63	0.00131
280	191.2	189.0	183.3	0.39	4.92	1.68	0.00112
270	191.0	188.6	183.3	0.33	4.49	1.61	0.00099
260	190.8	188.4	182.6	0.25	3.99	1.48	0.00068
250	190.7	188.1	181.7	0.29	4.31	1.53	0.00069
240	190.3	187.8	181.7	0.49	5.60	2.03	0.00124
230	189.8	187.4	182.1	0.78	6.86	2.58	0.00230
220	189.2	187.0	181.2	0.84	7.20	2.50	0.00236
210	188.8	186.7	180.3	0.74	6.87	2.15	0.00191
200	188.6	186.4	180.6	0.61	6.15	2.06	0.00166
195	188.5	186.3	181.0	0.57	5.84	2.16	0.00172
185	188.2	185.9	180.6	0.41	4.99	1.88	0.00123
180	188.2	185.8	179.8	0.33	4.54	1.64	0.00086
170	188.0	185.5	179.1	0.29	4.35	1.52	0.00070
160	187.9	185.1	179.4	0.26	4.06	1.53	0.00067
150	187.8	184.8	179.5	0.27	4.15	1.75	0.00073
140	187.6	184.4	178.7	0.33	4.59	1.86	0.00079
130	187.4	184.2	177.8	0.38	5.05	1.89	0.00083
120	187.2	183.9	178.5	0.44	5.34	2.28	0.00110
110	186.7	183.5	178.2	0.75	6.90	3.27	0.00193
105	Bridge						
100	185.4	183.3	178.0	0.91	7.40	3.69	0.00278

1700 cfs Widened Bridge						
Model Sta	W.S. Elev (ft)	Bank Elev (ft)	Min Ch El (ft)	Shear Chan (lb/sq ft)	Vel Chnl (ft/s)	E.G. Slope (ft/ft)
610	207.5	208.0	200.5	0.26	3.77	0.00113
600	207.2	208.0	201.0	0.36	4.41	0.00149
590	206.9	206.0	204.0	0.50	4.65	0.00288
580	206.5	206.0	202.0	0.25	3.61	0.00116
570	206.0	205.9	202.0	0.38	4.18	0.00261
560	205.0	205.3	202.0	0.37	4.10	0.00272
550	204.3	204.5	202.0	0.51	4.73	0.00408
547	204.2	204.4	200.5	0.33	4.00	0.00199
545	204.1	204.0	200.0	0.32	3.93	0.00181
540	204.0	204.1	200.0	0.29	3.80	0.00156
530	203.5	203.4	200.0	0.39	4.27	0.00243
520	202.3	202.2	200.0	0.95	6.00	0.01132
515	200.5	201.4	196.8	0.69	5.81	0.00387
513	200.4	200.9	194.6	0.32	4.15	0.00133
510	200.3	200.4	194.1	0.26	3.81	0.00105
500	199.1	199.5	195.3	0.84	6.31	0.00519
490	198.6	198.8	192.5	0.27	3.87	0.00110
480	197.6	197.8	193.6	0.73	5.92	0.00435
470	197.1	197.0	190.7	0.23	3.58	0.00088
460	196.4	196.2	191.9	0.45	4.71	0.00238
450	195.7	195.7	190.2	0.48	4.93	0.00254
445	195.2	195.2	188.8	0.24	3.62	0.00091
440	195.1	194.9	188.5	0.20	3.39	0.00075
430	194.7	194.4	190.1	0.33	4.10	0.00169
422	194.0	194.0	189.7	0.64	5.57	0.00376
420	193.7	193.9	189.2	0.57	5.31	0.00309
415	193.5	193.6	187.2	0.25	3.69	0.00096
410	193.4	193.4	187.0	0.23	3.59	0.00089
405	193.3	193.1	186.7	0.22	3.48	0.00080
400	193.2	193.0	187.1	0.25	3.72	0.00104
390	192.8	192.7	187.4	0.43	4.66	0.00221
380	192.4	192.4	186.8	0.38	4.44	0.00184
370	192.1	192.0	185.6	0.23	3.57	0.00088
360	191.8	191.7	186.0	0.34	4.20	0.00152
350	191.3	191.5	186.2	0.50	4.97	0.00264
340	190.8	190.9	184.7	0.27	3.82	0.00108
330	190.7	190.7	184.3	0.24	3.62	0.00091
320	190.4	190.4	184.6	0.31	4.06	0.00137
310	190.0	190.1	184.8	0.46	4.82	0.00243
300	189.6	189.7	183.9	0.36	4.32	0.00165
290	189.4	189.3	182.9	0.23	3.56	0.00087
280	189.1	189.0	183.3	0.33	4.17	0.00151
270	188.6	188.6	183.3	0.47	4.86	0.00249
260	188.3	188.4	182.6	0.33	4.15	0.00148
250	188.1	188.1	181.7	0.23	3.59	0.00089
240	187.9	187.8	181.7	0.26	3.77	0.00107
230	187.4	187.4	182.1	0.46	4.80	0.00240
220	187.0	187.0	181.2	0.34	4.21	0.00153
210	186.8	186.7	180.3	0.22	3.54	0.00085
200	186.6	186.4	180.6	0.28	3.89	0.00117
195	186.4	186.3	181.0	0.42	4.59	0.00212
185	185.8	185.9	180.6	0.50	4.99	0.00268
180	185.6	185.8	179.8	0.32	4.15	0.00142
170	185.4	185.5	179.1	0.24	3.66	0.00094
160	185.1	185.1	179.4	0.34	4.22	0.00158
150	184.7	184.8	179.5	0.48	4.90	0.00254
140	184.2	184.4	178.7	0.39	4.46	0.00183
130	184.2	184.2	177.8	0.24	3.62	0.00092
120	183.8	183.9	178.5	0.44	4.74	0.00228
110	183.2	183.5	178.2	0.54	5.16	0.00290
105	Bridge					
100	182.1	183.3	178.0	0.79	6.13	0.00488

8000 cfs Widened Bridge							
Model Sta	W.S. Elev (ft)	Bank Elev (ft)	Min Ch El (ft)	Shear Chan (lb/sq ft)	Vel Chnl (ft/s)	Vel Overbank (ft/s)	E. G. Slope (ft/ft)
610	211.9	208.0	200.5	0.85	7.64	2.16	0.00174
600	210.5	208.0	201.0	1.78	10.78	2.53	0.00423
590	209.8	206.0	204.0	2.01	10.48	3.59	0.00564
580	209.1	206.0	202.0	1.18	8.61	2.27	0.00315
570	208.5	205.9	202.0	1.00	7.65	2.83	0.00330
560	207.4	205.3	202.0	0.96	7.40	2.27	0.00339
550	206.7	204.5	202.0	1.00	7.54	2.90	0.00363
547	206.5	204.4	200.5	0.92	7.37	3.09	0.00291
545	206.4	204.0	200.0	0.97	7.58	2.69	0.00304
540	206.1	204.1	200.0	0.96	7.57	2.49	0.00300
530	205.0	203.4	200.0	1.40	8.74	2.54	0.00569
520	204.1	202.2	200.0	0.97	6.97	1.86	0.00507
515	203.0	201.4	196.8	1.04	7.50	2.16	0.00428
513	202.7	200.9	194.6	0.91	7.52	2.24	0.00248
510	202.5	200.4	194.1	0.71	6.69	2.34	0.00184
500	201.4	199.5	195.3	1.09	7.93	3.26	0.00370
490	200.4	198.8	192.5	1.07	8.13	2.48	0.00300
480	199.5	197.8	193.6	1.02	7.62	2.78	0.00366
470	198.7	197.0	190.7	0.76	6.87	2.05	0.00212
460	198.0	196.2	191.9	0.72	6.41	2.27	0.00256
450	197.5	195.7	190.2	0.57	5.74	2.04	0.00189
445	196.8	195.2	188.8	0.58	5.97	1.76	0.00161
440	196.6	194.9	188.5	0.50	5.55	1.61	0.00136
430	196.3	194.4	190.1	0.45	5.07	1.82	0.00153
422	196.0	194.0	189.7	0.41	4.90	1.82	0.00141
420	195.8	193.9	189.2	0.47	5.25	1.85	0.00150
415	195.7	193.6	187.2	0.40	5.04	1.60	0.00104
410	195.4	193.4	187.0	0.59	6.10	1.80	0.00154
405	195.1	193.1	186.7	0.64	6.36	1.82	0.00168
400	195.1	193.0	187.1	0.54	5.80	1.91	0.00151
390	194.7	192.7	187.4	0.67	6.32	2.10	0.00215
380	194.4	192.4	186.8	0.56	5.81	1.90	0.00171
370	194.0	192.0	185.6	0.46	5.38	1.72	0.00120
360	193.7	191.7	186.0	0.58	5.92	1.99	0.00170
350	193.2	191.5	186.2	0.83	6.94	2.24	0.00274
340	192.7	190.9	184.7	0.58	6.00	1.67	0.00163
330	192.5	190.7	184.3	0.50	5.58	1.60	0.00135
320	192.2	190.4	184.6	0.51	5.57	1.70	0.00151
310	192.0	190.1	184.8	0.51	5.46	1.76	0.00162
300	191.6	189.7	183.9	0.52	5.62	1.70	0.00152
290	191.3	189.3	182.9	0.50	5.65	1.63	0.00131
280	191.2	189.0	183.3	0.39	4.92	1.68	0.00112
270	191.0	188.6	183.3	0.33	4.49	1.61	0.00099
260	190.8	188.4	182.6	0.25	3.99	1.48	0.00068
250	190.7	188.1	181.7	0.29	4.32	1.53	0.00069
240	190.3	187.8	181.7	0.49	5.60	2.04	0.00124
230	189.8	187.4	182.1	0.78	6.87	2.59	0.00231
220	189.2	187.0	181.2	0.85	7.26	2.51	0.00240
210	188.8	186.7	180.3	0.77	6.97	2.16	0.00198
200	188.6	186.4	180.6	0.64	6.29	2.08	0.00176
195	188.5	186.3	181.0	0.61	6.02	2.20	0.00185
185	188.2	185.9	180.6	0.45	5.22	1.93	0.00137
180	188.1	185.8	179.8	0.36	4.75	1.68	0.00096
170	187.9	185.5	179.1	0.32	4.58	1.56	0.00080
160	187.8	185.1	179.4	0.29	4.30	1.59	0.00077
150	187.6	184.8	179.5	0.31	4.40	1.82	0.00084
140	187.4	184.4	178.7	0.38	4.91	1.94	0.00094
130	187.2	184.2	177.8	0.44	5.43	1.96	0.00100
120	187.0	183.9	178.5	0.53	5.79	2.40	0.00137
110	186.6	183.5	178.2	0.61	6.19	3.01	0.00159
105	Bridge						
100	185.5	183.3	178.0	0.68	6.42	3.39	0.00206

# HEC-RAS Water Surface Profiles

